



# **Managing dental amalgam waste**

## **King County, WA 1995-2002**

**Gail Savina**

**206-263-3062**

**[gail.savina@metrokc.gov](mailto:gail.savina@metrokc.gov)**

**[www.metrokc.gov/hazwaste/](http://www.metrokc.gov/hazwaste/)**

## **Goals of talk:**

- Describe King County's voluntary program to manage dental waste (1995 - 2000) and give results
- Describe King County's mandate for dentists to meet local sewer discharge limits (2001 - present) and give results

## **King County background:**

- Population = 1.7 million
- Est. 1500-1800 dentists. ~1000 - 1300 remove or place amalgam fillings.
- 85% belong to local dental society.
- King County wastewater treatment system serves 1.4 m. in King and So. Snohomish Counties
- Treatment plant effluent is discharged into Puget Sound.

# King County background, cont.:

- Biosolids: 100% recycled (land applied to croplands and forests). None are incinerated or landfilled.

There is pressure to maintain high quality biosolids, since cost implications of landfilling are huge.



## King County background, cont.:

- The King County sewer utility has a delegated pretreatment program. Local discharge limits (small dischargers) for mercury are 0.2 ppm.

# King County Chronology:

- **1991 - Study.** King Co. study confirmed that dental sector was a “significant and identifiable” source of mercury to the wastewater system - 14%.

[www.metrokc.gov/hazwaste/pubs/studies/](http://www.metrokc.gov/hazwaste/pubs/studies/)

- **1991 - 94 - Review process.** King Co. reviewed available separation units, developed a set of considerations to evaluate separation units and published a guidebook for dentists.

## **King County Chronology, cont.:**

- **1994 - First 'rule'.** King Co. proposed a rule requiring dental offices to install amalgam separation equipment to control discharge of mercury-bearing amalgam. This was vigorously resisted by dental community--local, state and national.
- **1995 - 'rule' postponed.** King Co. postponed the rule and agreed to work with the dental community to meet mercury discharge limits voluntarily.

# **King County Chronology, cont.:**

Rationale for undertaking voluntary program:

- Intense resistance to regulation from organized dentistry;
- Offer by organized dentistry to collaborate on this issue;
- Supply infrastructure (of amalgam separators and waste haulers) was immature (few choices, high prices);
- Would allow dentists to comply in more leisurely fashion, without disrupting operations.



# **Voluntary program, 1995 - 2000**

**Seattle-King County Dental Society set up a standing committee to work with King Co.**

- met several times/year
- developed poster and handbook for dentists
- wrote articles for *Journal*
- mailed information to all members
- co-sponsored free waste pick up event

# **Voluntary program, 1995 - 2000, cont.**

## **Seattle-King County Dental Society, cont.**

- presented “Green Dentistry” session in Pacific NW Dental Conference twice
- won a regional environmental achievement award for its efforts to educate member dentists.

Washington State Dental Association was not involved in these efforts. WSDA maintained an arms’ length relationship, even though half their members are in King Co.

# Voluntary program, 1995 - 2000, cont.

## Other (independent) King Co. efforts:

- ads (see right)
- outreach to dental supply houses
- outreach to voc tech programs for dental assistants



The advertisement features a black and white photograph of two dental amalgam capsules. One capsule is open, showing a small piece of amalgam, and has the word 'PRESS' printed on it. The other capsule is closed. Below the image, the text reads: 'Hazardous waste doesn't belong in the "red bag".' A horizontal line separates this from the text: 'Amalgam • Fixer • Leadfoils Need to be reclaimed.' To the right of this text is a logo consisting of a five-pointed star with a recycling symbol inside, and the word 'ENVIROSTARS' below it. Below the logo, the text says: 'Call King County at 206-263-3090 for referrals.' At the bottom, a dark banner contains a small circular logo and the text: 'A service of the Local Hazardous Waste Management Program in King County'.

Hazardous waste doesn't belong in the "red bag".

Amalgam • Fixer • Leadfoils  
Need to be reclaimed.

Call King County at 206-263-3090 for referrals.

 ENVIROSTARS

 A service of the Local Hazardous Waste Management Program in King County

## **Voluntary program, 1995 - 2000, cont**

### **Other (independent) King Co. efforts, cont.:**

- cash rebates for purchase of amalgam separators (up to \$500)
- technical assistance visits to dental offices
- promote “EnviroStars” dentists

# Dentists were promoted as EnviroStars

## LOCAL FOCUS Two local dentists honored as EnviroStars for recycling

By Susan McDonald

If you happen to spot two athletic figures running around Lake Union at rush hour, it may be Dr. Steve Albright and Paula Cipolla commuting between their Queen Anne home and their Lake Union dental office. Running to work instead of driving is just one of their activities that offer environmental and health benefits.

Waste management practices were the logical option for Escheid's dental practice. "I don't want to contribute to heavy metals in our waterways," he said. "If every person does the right thing, then the whole community benefits. This is my way of doing the right thing."

Recycling is the key strategy for many wastes, such as used X-ray film, mercury in this material is also reclaimed. Naturally, both offices also recycle solid waste such as office paper, cardboard, plastic and glass.

To spread the word about pollution prevention, Escheid discusses recycling and waste management issues with other dentists and his study club. So does Albright, who is a member of the Executive Council of the Seattle-King County Dental Society and also teaches at the University of Washington Dental School.

Other EnviroStar businesses in the Queen Anne and Magnolia area include: Dr. James McAnally D.D.S., Hobbs Hiboy Auto, Fat City German



Dr. Steven Albright shows the X-ray unit that helped him become an EnviroStar in his Lake Union dental office.

### Local Dentists Honored As "EnviroStars"

Four local dentists, Dr. Les Seely, Dr. Susan Hollinsworth, Dr. Eric Hagman and David Skvorak in Maple Valley were recently named "EnviroStars" by the Local Hazardous Waste Management Program in King County.

This program honors businesses for their efforts to prevent pollution and protect the environment. To qualify as EnviroStars, these dentists have made a commitment to manage their practices in an environmentally friendly way.

Creating a healthy environment has meant several improvements in the way these dentists manage and dispose of hazardous materials. One example: amalgam, the substance used in dental fillings. Scrap amalgam is placed in a trap by chair when filling.

## THE SEATTLE PRESS

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Tomorrow the world

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Page 6-A The Seattle Press

### "Envirostar" dentists reduce office and dental waste

By SUSAN McDONALD



install a \$1,500 filter system that removes amalgam particles from water. For his efforts, Dr. McAnally receives the \$500 reimbursement, and the amalgam sludge is then sent to a company that recycles the mercury and silver.

WASTE REDUCTION is also an ongoing

reused for thermom products. Through h Services, Fakar build treatment units to other who use Fakar's "low do something at a min make a difference," he

## Congratulations to King County EnviroStars dentists!

45th Street Clinic  
Steve Albright  
S. David Buck  
Mark Caggiano  
R. Scott Cahoon  
Steve Carstensen  
Roger Chin  
B. Robert Cohanin  
Michelle Dotsch  
Raymond Dotsch  
Lisa Egbert  
Brian Etscheid  
Robert Feasel  
Ross Fraker  
Daniel Friedman  
Gentle Dental - Ballard

Robert Kieflner  
George Knutzen  
Brian Larsen  
Christine Lentz  
T. L. Leonard  
Mitchell Marder  
Stephanie Marvin  
James McAnally  
Diane McIntyre  
Eric Mock  
James Mock  
Gerrarda O'Beirne  
Steven J. Olson  
Adrian Pawlowski  
DeWitt Randall  
Thomas Roberts

Gregory Simunds  
David A. Skvorak  
Rhys Spoor  
Thomas P. Sweeney  
Alvin Taniguchi  
Christine Tweedy  
Patrice Yoder  
Carrie York  
Pamela Young

**The EnviroStars program recognizes environmentally responsible businesses.**  
Call (206) 263-3063.



ENVIROSTARS

Waste Management Program in King County



# King County Dental Program Costs, 1995 - 2001

	95	96	97	98	99	'00	'01
Poster	0	0	3000	2604	3186	1586	1652
Handbook	0	0	7302	4713	0	0	0
Ads	0	0	800	1030	800	935	900
Voucher rebate	0	0	3315	19988	11,163	14,670	15,582
Field visits @ @ \$100/visit	1400	3300	8900	13,400	20,000	12,800	3,700
Staff time @ \$36/hr (20% FTE)	14,400	14,400	14,400	14,400	14,400	14,400	14,400
TOTALS	15,800	17,700	30,415	58,724	54,262	44,391	36,234
GRAND TOTAL	257,526						

# **Voluntary program, 1995 - 2000, cont.**

## **Summary: Voluntary Program Inputs**

- King Co. didn't work alone. We had a highly cooperative local dental society. (The state association was not interested or involved.)
- The program cost a great deal - at least \$250,000-  
- and lasted a long time--6 years.

# **Voluntary program, 1995 - 2000, cont.**

Evaluation: fall 1999 - spring 2000

- random visits to 212 dental offices. Collected data on disposal of amalgam scrap, trap amalgam, pump filter sludge and fixer.
- contact with three manufacturers selling amalgam separators in 1999-2000. Obtained lists of offices that had installed separators.
- contact with waste haulers and mail away firms. Obtained list of offices with waste management contracts.



# Voluntary program, 1995 - 2000, Results

How King County dentists dispose of **amalgam scrap**  
(dry) 1999-2000

N = 160

<b>Properly dispose</b>	<b>60</b>	<b>38%</b>
Illegally dispose	43	27%
Neutral	57	36%

- Collect onsite
- Give to a friend
- “Intend” to call hauler

# Voluntary program, 1995 - 2000, Results

How King County dentists dispose  
of **chairside trap amalgam**,  
1999-2000

N = 172

<b>Properly dispose</b>	<b>46</b>	<b>27%</b>
Illegally dispose	91	53%
Neutral	35	20%

- Collect onsite
- Give to a friend
- “Intend” to call hauler

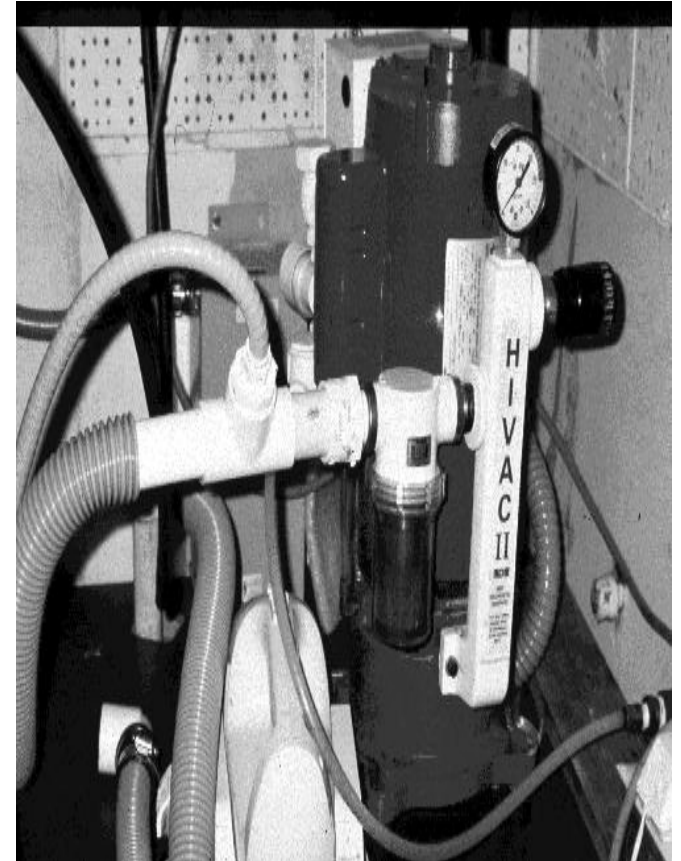


# Voluntary program, 1995 - 2000, Results

How King County dentists dispose  
of **pump filter sludge**, 1999-  
2000

**N = 143**

<b>Properly dispose</b>	<b>19</b>	<b>13%</b>
<b>Illegally dispose</b>	<b>76</b>	<b>56%</b>



# **Voluntary program, 1995 - 2000, Results**

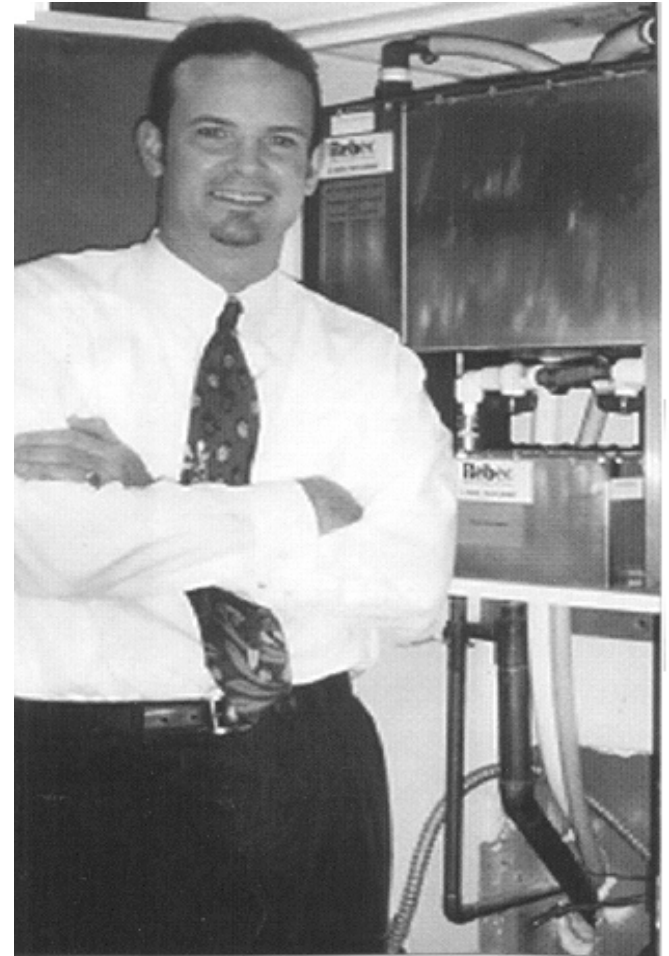
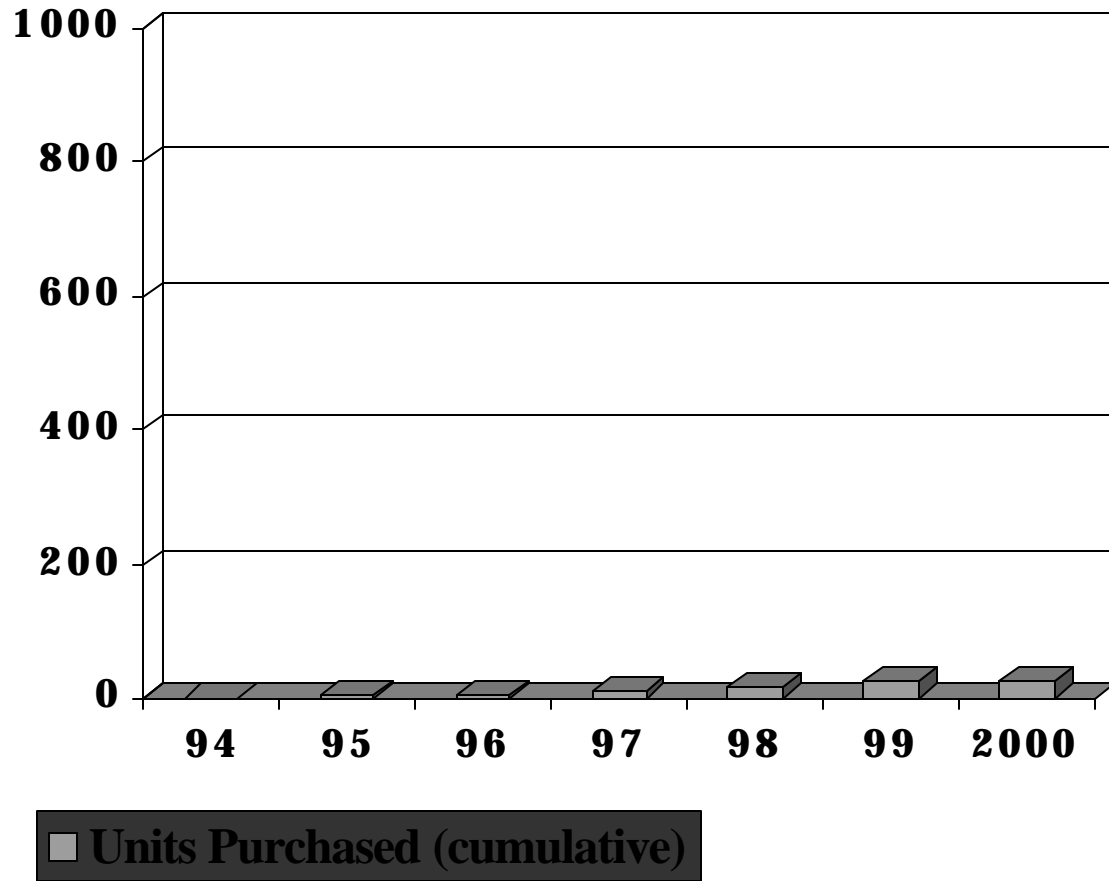
How King County dentists dispose of **fixer**, 1999-2000

**N = 201**

<b>Properly dispose</b>	<b>123</b>	<b>61%</b>
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# Voluntary program, 1995 - 2000, Results

Amalgam separation units installed 1994-2000



# **Voluntary program, 1995 - 2000, Results**

- Less than half properly managed scrap amalgam.  
Less than 25% properly managed chairside trap and pump filter waste.
- 25 offices installed amalgam separators (2.5% of those placing/removing amalgam).
- ~160 (10% of all offices generating DW) contracted with waste haulers and/or mail away firms.

# Voluntary program, 1995 - 2000, Results

From scrap amalgam in King County alone:

- 53 lbs of mercury goes to the 'red bag' annually
- 58 lbs of mercury goes to the garbage annually
- 40 lbs of mercury goes to unknown places annually

Report at

[www.metrokc.gov/hazwaste/pubs/studies/](http://www.metrokc.gov/hazwaste/pubs/studies/)

# Voluntary program, 1995 - 2000, Results

To sum up . . .

- King County spent \$250,000+ in 1995-2000
- 25 dental offices installed amalgam separators
- Hundreds of lbs of mercury from dental amalgams were disposed to garbage, 'red bag', sewer and 'unknown'



# Mandatory program, 2001-present

**July 2001:** King County dental offices informed that they must meet local discharge limit for mercury- 0.2 ppm

- Compliance deadline: July 1, 2003.
- 10 amalgam separators currently approved
- Enforcement protocol: notice of violation, compliance schedule, escalating penalties

# **Mandatory program, 2001-present, cont.**

How to meet limit:

- install approved amalgam separator; or
- apply for a permit and show that they meet the limit without a separator; or
- belong to ‘exempt’ specialty (orthodontics, periodontics, oral surgery, maxillo facial, some endodontics and prosthodontics)

# **Mandatory program, 2001-present**

Web site and contacts:

<http://dnr.metrokc.gov/wlr/indwaste/dentists.htm>

Patricia Magnuson

King County Industrial Waste

206-263-3021

[patricia.magnuson@metrokc.gov](mailto:patricia.magnuson@metrokc.gov)

# **Mandatory program, 2001-present**

## **Reactions:**

- Washington State Dental Association and attorneys met with King County. Key issue: how to exempt those offices that don't need a separator. Result: King Co. clarified that there were alternatives for demonstrating compliance.
- Seattle-King County Dental Association sponsored technology fair to display amalgam separators. Fall 2001, 2002. 150 dentists attended.

# Mandatory program, 2001-present: Results

No. of dental offices installing amalgam separators:

1995 - 1999	24
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2000	2
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Jan - June 2001	5
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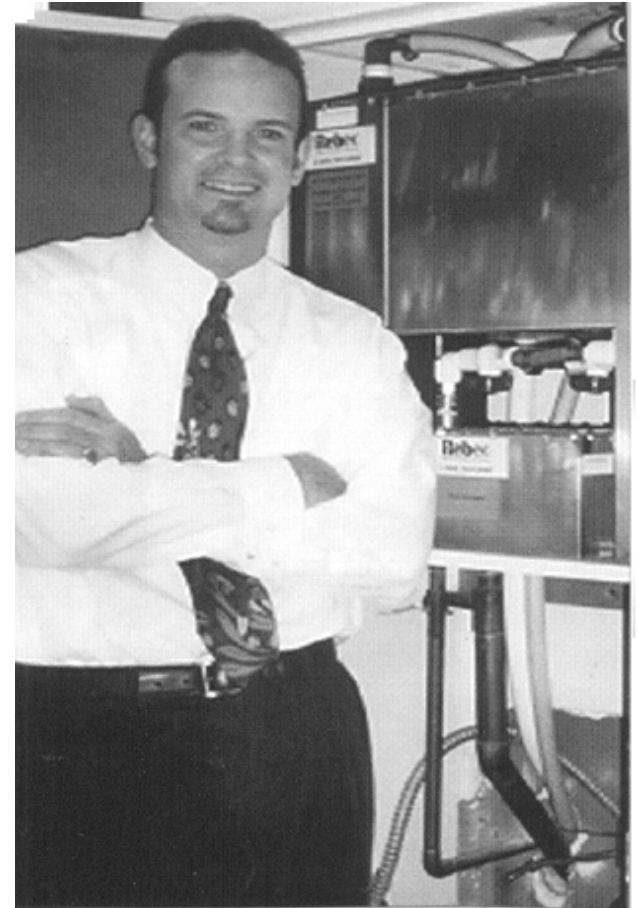
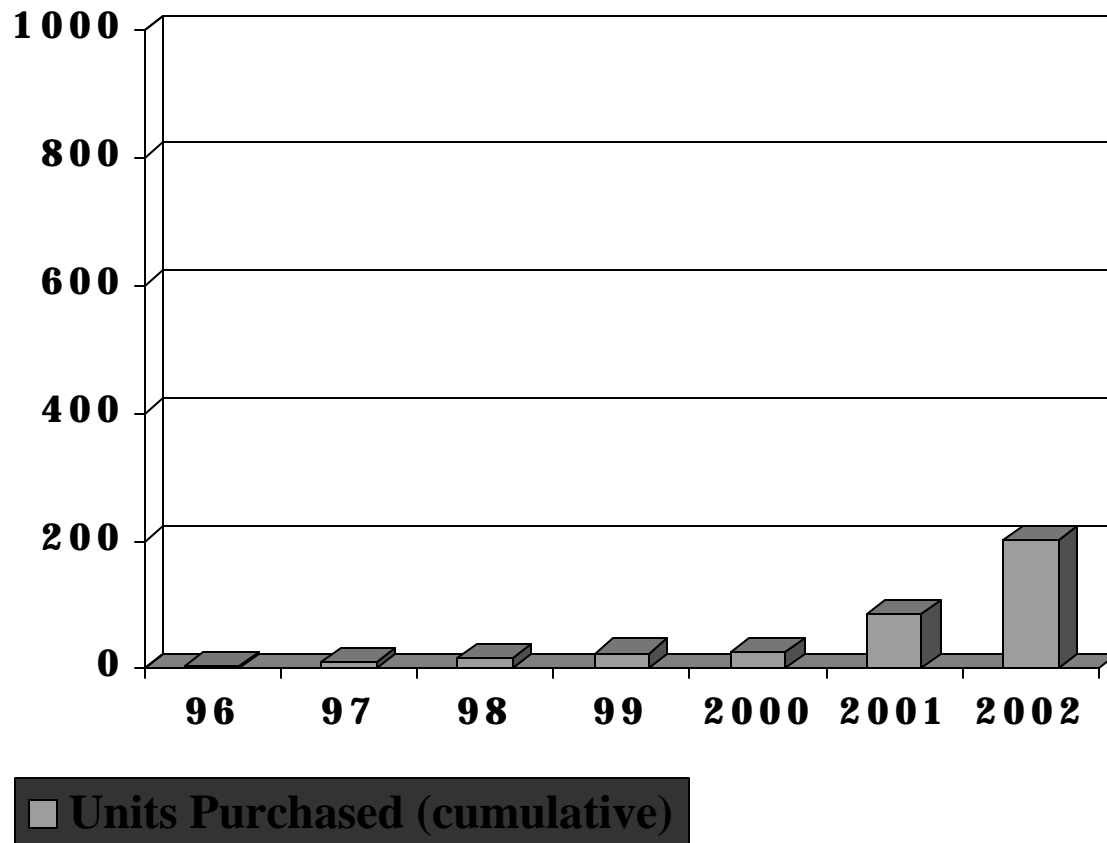
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July - Dec 2001	53
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Jan - June 2002	131
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# Mandatory program, 2001-present: Results

## No. of dental offices that install amalgam separation units, 1994-2002



# **Mandatory program, 2001-present:**

## **Conclusions**

- Dentists are complying. For the most part, those subject to the mandatory program aren't complaining (vs. complaints from organized dentistry). They are asking how to buy separators (not why).
- Mandated program creates a certainty within the profession about what will be required. Puts all dental offices on a "level playing field."

# **Mandatory program, 2001-present: Conclusions**

- Mandated program brought wider choices in technology and waste hauling options to our area. Prices have gone down.